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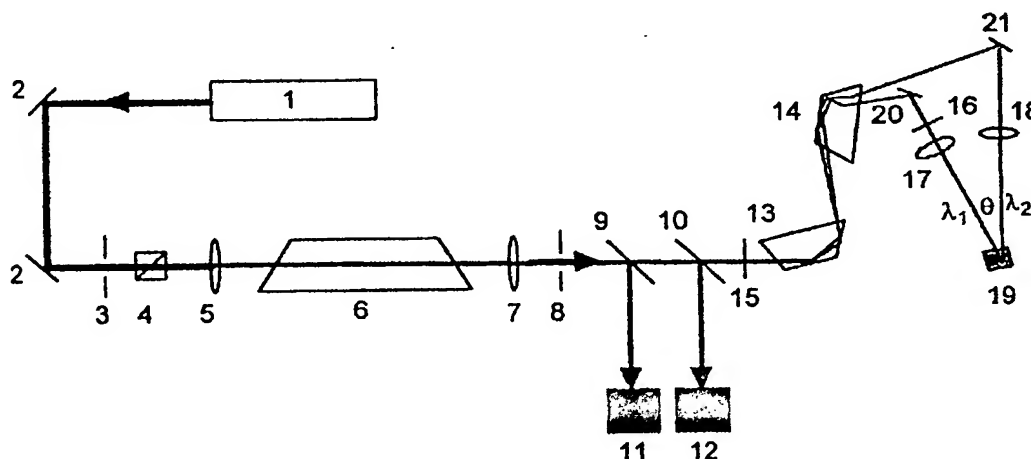
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- Declarations under Rule 4.17:**
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TWO-COLOR (TWO-PHOTON) EXCITATION WITH FOCUSED EXCITATION BEAMS AND A RAMAN SHIFTER



(57) Abstract: Two-color (two-photon) excitation with two confocal excitation beams is demonstrated with a Raman shifter as excitation light source. Two-color excitation fluorescence is obtained from Coumarin 6H dye sample (peak absorption = 394 nm, peak fluorescence = 490 nm) that is excited using the first two Stokes outputs (683 nm, 954 nm, two-color excitation = 398 nm) of a Raman shifter pumped by a 6.5 nsec pulsed 532 nm-Nd:YAG laser (Repetition rate = 10 Hz). The two Stokes pulses overlap for a few nanoseconds and two-color fluorescence is generated even with focusing objectives of low numerical apertures ($NA \leq 0.4$). We observed the linear dependence of the two-color fluorescence signal with the product of the average intensities of the two Stokes excitation beams. The two-color fluorescence distribution is strongly localized around the common focus of the confocal excitation beams.

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INTERNATIONAL SEARCH REPORT

Int. Application No
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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DYER M J ET AL: "LASER-INDUCED FLUORESCENCE MEASUREMENT OF OXYGEN ATOMS ABOVE A CATALYTIC COMBUSTOR SURFACE" APPLIED OPTICS, OPTICAL SOCIETY OF AMERICA, WASHINGTON, US, vol. 29, no. 1, 1990, pages 111-118, XP000086683 ISSN: 0003-6935 page 112-113; figures 1,2</p> <p style="text-align: center;">--- -/--</p>	1-24

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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X	US 5 995 281 A (SIMON ULRICH ET AL) 30 November 1999 (1999-11-30) column 1-4; figures 1,2,9 ---	1-24
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X	FLETCHER D G: "TWO-PHOTON EXCITATION OF ATOMIC OXYGEN USING A RAMAN-SHIFTED ARF-EXCIMER LASER" APPLIED PHYSICS B: LASERS AND OPTICS, SPRINGER INTERNATIONAL, BERLIN, DE, vol. B60, no. 1, 1995, pages 61-65, XP000489187 ISSN: 0946-2171 page 62-63; figure 5 ---	1-24
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